REPORT

VOI I OF I

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SUPPLEMENTAL PHASE II/ RCRA FACILITY INVESTIGATION REPORT FOR HOUSATONIC RIVER AND SILVER LAKE

VOLUME I OF II

General Electric Company

Pittsfield, Massachusetts

January 1996

BBB BBB BLASLAND, BOUCK & LEE. INC. engineers & scientists

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BLASLAND, BOUCK & LEE, INC. 6723 TOWPATH ROAD SYRACUSE, NY 13214-0066

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SECTION 1 · INTRODUCTION

1.1 General

This report has been prepared to meet two sets of requirements applicable to the General Electric Company (GE) facility in Pittsfield, Massachusetts. First, this document constitutes a Supplemental Phase II Report on a Comprehensive Site Assessment of the Housatonic River and Silver Lake, as required by the Massachusetts Department of Environmental Protection (MDEP) (Site I.D. No. 1-1047) pursuant to the Massachusetts Contingency Plan (MCP) and a Consent Order executed by GE and the MDEP in May 1990.

Second, this document constitutes a report on an investigation of the Housatonic River and Silver Lake pursuant to a permit (the "Permit") issued to GE by the United States Environmental Protection Agency (USEPA) under the corrective action provisions of the federal Resource Conservation and Recovery Act (RCRA) as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA). The Permit was originally issued in February 1991 and was reissued, as modified, effective January 3, 1994. Pursuant to the Permit, this document constitutes a RCRA Facility Investigation (RFI) Report for the Housatonic River and Silver Lake, which are designated by the USEPA as Area 6. This document has been prepared by Blasland, Bouck & Lee, Inc. (BBL) on behalf of GE.

The primary focus of this document is the presentation and evaluation of data generated pursuant to the "MCP Supplemental Phase II Scope of Work and Proposal for RCRA Facility Investigation of Housatonic River and Silver Lake," (BBL, June 1994) (hereafter referred to as the "Phase II/RFI Proposal"), as conditionally approved by the MDEP and USEPA (the Agencies) via letter dated September 12, 1994. Data previously reported in the "MCP Interim Phase II Report/Current Assessment Summary for Housatonic River" (Blasland & Bouck,

December 1991) (hereafter referred to as the "Interim Phase II Report/CAS") and its addendum (Blasland & Bouck, August 1992a) have been appropriately incorporated as part of these evaluations. Those documents, in their entirety, are incorporated by reference herein. It is important to note, however, that, as detailed in various sections below, several investigations called for in the Phase II/RFI Proposal and/or subsequently required by the Agencies have not yet been completed for various reasons. This report covers activities performed and data received through the end of 1995. Additionally, GE has proposed several additional activities to further expand the understanding of various aspects of the site. These activities are presented in an Addendum to the Phase II/RFI Proposal (BBL, November 1995) which was approved by the Agencies via letter dated December 7, 1995.

Accordingly, the conclusions presented in this report are necessarily limited and preliminary. Upon completion of the outstanding investigations, the results of those additional investigations, as well as overall conclusions on the issues involved, will be presented in an addendum to this report in accordance with the schedule discussed in Section 11.

1.2 Background Information

The Housatonic River and Silver Lake have been the subject of numerous investigations performed over the years, dating back to the mid-1970's. Table 1-1 presents a summary of these investigations. The Housatonic River and Silver Lake are currently designated by the MDEP as being in Phase II (Comprehensive Assessment) of the MCP process. GE has completed numerous MCP Phase II investigations associated with the Housatonic River and Silver Lake. These activities were proposed in a MCP Phase II Scope of Work (SOW) submitted to the MDEP in June 1990 (Blasland & Bouck, June 1990a), accompanied by a

Housatonic River Supplemental Data Summary (Blasland & Bouck, June 1990b), which presented the results of prior investigations of the Massachusetts section of the Housatonic River and Silver Lake. The revised SOW was conditionally approved by the MDEP (subject to certain conditions) on October 2, 1990.

The proposed MCP Phase II investigations were completed in September The results of these investigations were reported in the Interim Phase II That document, submitted to the MDEP and the USEPA in Report/CAS. December 1991, not only reported the results of the MCP Phase II investigation, but also provided a summary of investigations performed prior to the MCP Consent Order, as well as those performed in the Connecticut portion of the Housatonic River pursuant to the 1990 Cooperative Agreement between GE and the Connecticut Department of Environmental Protection (CDEP). identified certain data gaps to be addressed to complete the MCP Phase II The MDEP provided comments on the Interim Phase | Report/CAS investigation. in a letter dated June 15, 1992. In response, an Addendum to the Interim Phase II Report/CAS was submitted to the MDEP and USEPA on August 25, 1992 (Blasland & Bouck, August 1992a), which provided clarification to a number of comments made by the MDEP in its June 15, 1992 letter, as well as the results of additional investigations conducted between December 1991 and August 1992.

In addition, following preliminary review of the Interim Phase II Report/CAS, the MDEP directed GE, via a letter dated March 18, 1992, to submit a plan to evaluate the potential need for short-term measures (STMs) in the floodplain of the Housatonic River, due to the presence of polychlorinated biphenyls (PCBs) in certain floodplain soils. In response, GE submitted a 'Plan for Evaluation of Need for Short-Term Measures in Floodplain of Housatonic River' (GE, April 1992) ("STM Evaluation Plan") on April 16, 1992. That proposed plan was conditionally approved by the MDEP on May 8, 1992.

The activities outlined in the STM Evaluation Plan have been completed, satisfying a number of the data gaps identified in the Interim Phase II Report/CAS and in the MDEP's letter of June 15, 1992. Various reports on those activities have been submitted to the MDEP (Blasland & Bouck, August 1992b; Blasland & Bouck, October 1992; Blasland & Bouck, February 1993; ChemRisk, April 1993). In addition, various STM remedial-action activities have been proposed for several "use areas" of the floodplain (Blasland & Bouck, September 1993; Blasland & Bouck, October 1993). The MDEP provided conditional approval of these activities in a letter dated April 22, 1994; and associated remedial design specifications were submitted to the MDEP and Pittsfield Conservation Commission on May 23, 1994. These activities have since been completed, and included at varying locations the posting of signs, installation of exposure barriers (i.e., hedgerows and/or surface capping) and/or soil removal.

Also, pursuant to the MDEP's letter of June 15, 1992, GE provided the MDEP with a Supplemental Phase II SOW on August 25, 1992 (Blasland & Bouck, August 1992c) to address the remaining data gaps identified in the Interim Phase II Report/CAS and the MDEP letter. However, in response to a request from the MDEP dated February 19, 1993, that Supplemental **Phase II SOW was** revised and reformatted so that it also constituted an RFI Proposal under the Permit. On April 29, 1993, GE submitted a document to the MDEP and USEPA entitled 'MCP Supplemental Phase II Scope of Work and Proposal for RCRA Facility Investigation of Housatonic River and Silver Lake' (Blasland & Bouck, April 1993). That document incorporated the information contained in the August 1992 Supplemental Phase II SOW, and additional information was added in order for it also constitute an RFI Proposal. That document was prepared in such a manner to facilitate a coordinated agency review.

When the April 1993 Phase II/RFI Proposal was issued, the February 1991 Corrective Action Permit was stayed pending final resolution of an appeal by GE and others. In accordance with a previous settlement of a portion of that appeal, the April 1993 RFI Proposal proposed, to the extent feasible, to rely on existing data and the results of prior investigations conducted for the MDEP and CDEP as a basis for proposing how to accomplish the Permit's goals.

The Agencies issued joint review comments on the April 1993 Phase II/RFI Proposal on April 22, 1994. That letter required GE to submit, within 60 days, a revised Phase II/RFI Proposal addressing the Agencies' comments. That document was submitted to the Agencies on June 21, 1994, and superseded the April 1993 Phase II/RFI Proposal. Via letter dated September 12, 1994, the Agencies conditionally approved the June 1994 Phase II/RFI Proposal, and GE commenced field activities shortly thereafter. These activities were performed in accordance with protocols presented in GE's 'Sampling and Analysis Plan/Data Collection and Analysis Quality Assurance Plan' (SAP/DCAQAP) (BBL, May 1994), with subsequent revisions approved by the Agencies.

Pursuant to the Agencies' September 12, 1994 conditional approval letter, GE submitted Quarterly Progress Reports to the Agencies on December 30, 1994, March 24, 1995, June 27, 1995, and September 25, 1995 (BBL, December 1994, March 1995, June 1995, and September 1995, respectively). These reports summarized the activities performed during each respective quarter, summarized analytical data which had been reported during each respective quarter, presented any preliminary conclusions which could be drawn from the data received, and summarized activities to be performed and data anticipated during the next quarter. In addition to these Quarterly Progress Reports, GE submitted monthly summaries identifying the activities performed and the data received during each month.

As indicated above in Section 1.1, this report covers activities performed and data received through the end of 1995. As detailed in various sections below, several activities have not yet been completed for various reasons. Additionally, GE has proposed several additional activities to further expand the knowledge of various aspects of the site. These activities are presented in an Addendum to the June 1994 Phase II/RFI Proposal, which was submitted to the Agencies on November 17, 1995. The Agencies provided joint approval of the proposed activities in a letter dated December 7, 1995; however, in order to expedite the implementation of these efforts, select activities began on November 3, 1995.

It is also important to note that apart from the June 1994 Phase II/RFII Proposal, GE submitted a "Proposal for the Preliminary Investigation of Corrective Measures for Housatonic River and Silver Lake Sediment (PICM Proposal)" (RUST, May 1994) to the Agencies on May 30, 1994 under Special Permit Condition II.A.6.a. The Agencies provided joint comments regarding that document via letter dated January 6, 1995. In accordance with that letter, GE submitted a revised PICM Proposal on March 20, 1995 (Canonie Environmental, March 1995), incorporating the Agencies' January 6, 1995 comments. The Agencies issued a conditional approval of that revised PICM Proposal on July 6, 1995. Activities related to the revised PICM Proposal are ongoing. The PICM report summarizing the results of these activities is scheduled to be submitted May 1, 1996.

1.3 Format of Document

This document has been divided into several sections. It includes a description of site location and history, an overview of previous investigations conducted at the site, the results of the recent Supplemental Phase II/RFI activities completed through the end of 1995, and a characterization of the

presence, extent, and migration of PCBs and other hazardous constituents associated with the site (to the extent data are available).

Specifically, Section 1 presents pertinent background, including mainly the history of investigations. Section 2 describes the environmental setting of the site, including an overview of the physical location and extent of the site, associated hydrogeology, climatic conditions, and affected media. Sections 3 through 8 provide a more detailed discussion of the affected media and related investigations. Section 9 presents an assessment of the potential ongoing migration of hazardous constituents associated with the site. Section 10 describes remaining data needs and future activities. Finally, Section 11 discusses a schedule for completing the future activities.

In addition, Appendices A through D and the various tables and figures included herein provide supporting information referenced in this report. Laboratory analytical data sheets for Phase II/RFI analyses performed between June 1994 and December 1995 will be compiled and submitted shortly under separate cover. Based on conversations between GE and the MDEP held on January 19, 1996, one copy of that documentation will be provided to each of the MDEP, the USEPA, and the Berkshire Athenaeum in Pittsfield, Massachusetts.

SECTION 10 - REMAINING DATA NEEDS AND FUTURE ACTIVITIES

As indicated in preceding sections of this report, several field activities that were a part of the original Supplemental Phase II/RFI investigations or have subsequently been determined to be warranted have yet to be completed. These activities are briefly summarized below.

Activities that were proposed in the original Phase II/RFI Proposal or in submittals during the course of that original investigation and which have not yet been completed include the following:

- Analysis of settleability characteristics of sediment from the Housatonic River and Silver Lake;
- Resampling and analysis of Silver Lake sediments for grain size versus PCB and oil & grease;
- Completion of the Housatonic River suspended sediment harvesting and PCB analysis activities;
- Collection of an additional round of sediment samples from Woods
 Pond sediment traps;
- Additional sampling and analysis to delineate the vertical extent of PCB presence in Silver Lake bank soils: and
- Collection and evaluation of groundwater samples from wells RF-2, RF-3, and RF-16 within East Street Area 2/USEPA Area 4.

Most of these activities are underway, and the results will be reported in the addendum to this report according to the schedule discussed in Section 11.

The Addendum to the Phase II/RFI Proposal proposed a number of additional investigations, which were approved by the Agencies in December 1995. As outlined in more detail in that Addendum, these include the following activities:

- Upstream sediment and floodplain soil sampling and analysis for select Appendix IX+3 constituents to further define upstream/background levels of constituents associated with the Housatonic River, followed by comparison of all upstream data with existing downstream data in order to complete the assessment of the need for further downstream sediment and/or floodplain soil sampling:
- Sediment sampling and analysis to assess sedimentation characteristics
 in Rising Pond; and
- Surface water sampling and analysis at various locations in the river upstream of, adjacent to, and downstream of the GE facility during various flow conditions to further assess current ambient PCB concentrations in, and transport via, the water column.

These activities are currently underway and the results will be reported according to the schedule described in Section 11.

In addition to the activities summarized above, a couple of other, additional investigations have been identified as appropriate to conduct prior to completion of the Phase II/RFI activities.

First, as discussed in Section 3.3.6, several sediment samples will be collected from the city storm sewers discharging to Silver Lake along its northwest shore, and will be analyzed for PCBs and Appendix IX+3 SVOCs, PCDDs/PCDFs, and inorganic constituents in order to assess potential sources to Silver Lake unrelated to the GE facility. These activities will commence upon coordination with the Pittsfield Department of Public Works.

In addition, since PCBs preferentially partition onto solids, the origin, fate, and transport of solids within the Housatonic River is an important determinant of PCB dynamics in the river system. Further, since solids transport is highest during high-flow periods, it is important to understand solids dynamics during

such events. High-flow events in systems such as the Housatonic River are transitory. Typically, solids concentrations increase with increasing river flow velocity until the sediment bed begins to armor itself. Under such conditions, the majority of solids will be transported during the initial periods of a high-flow event. This makes capturing of the solids transport difficult during routine monitoring. Hence, to supplement the additional water column monitoring described above (and in the Addendum to the Phase II/RFI Proposal), GE plans to install battery-operated automated suspended solids samplers within the water column (inside protective PVC pipe casing) at five locations in the river:

- Dawes Avenue Bridge,
- · Holmes Road Bridge,
- New Lenox Road Bridge,
- · Woods Pond Headwaters, and
- Schweitzer Bridge.

These samplers will be programmed to collect one discrete sample every hour over a 2 to 3 week period during which high-flow events are expected. Samples collected during a high-flow event will be individually analyzed for TSS to provide a temporal profile of solids transport during such events at each of the five stations. If a high-flow event is not encountered over a given 24-hour period, the 24 samples collected from each station will be composited and analyzed for TSS to provide daily average solids concentration data.

The results of the foregoing activities will also be reported in the addendum to this report in accordance with the schedule described in Section 11.

It is also important to note that several additional field activities are also ongoing (or scheduled to be performed) as part of the PICM Proposal. These activities include (but are not limited to) the following:

Bathymetric survey of Woods Pond;

- Water velocity measurements (five events) in the three distinct channels at the inlet to Woods Pond coincident with measurements of surface water elevation at the Woods Pond headwaters and at Woods Pond Dam; and
- Detailed survey of the geometry of the three distinct channels at the inlet to Woods Pond.

A description of these activities and the associated results will be included in the PICM Report scheduled to be submitted on May 1, 1996.

Finally, as indicated in Section 6, additional YOY fish samples will be collected in fall 1996 from the Massachusetts portion of the Housatonic River. and additional adult fish will be collected in the same season from the Connecticut portion of the river. These samples will again be analyzed for PCBs and lipid content, and the results will be presented in appropriate reports to the MDEP and/or the CDEP and to the USEPA.

SECTION 11 - SCHEDULE

As indicated previously in this report, several investigations have yet to completed before meaningful conclusions can be drawn regarding various aspects of the project. These activities have been summarized in Section 10 and include several activities proposed in the original Phase II/RFI Proposal, the activities described in the Addendum to that proposal, and certain other investigations described in Section 10. Some, but not all, of these activities should be completed during the first quarter of 1996. Notably, it is anticipated that the additional upstream sediment and floodplain soil sampling and analysis for select Appendix IX+3 constituents, as described in Section 2.2 of the Addendum to the Phase II/RFI Proposal, will be completed during this quarter, subject to weather and access constraints. Following the receipt of those results and a comparison to the existing downstream data, GE will submit an interim report presenting the new upstream data, the results of GE's revised evaluation of the data to identify 'target' constituents for further sampling, and, if appropriate, a proposal for further sediment and/or floodplain soil sampling for select constituents. interim report will also describe any other additional investigations that have been conducted by that time and will present any analytical results that have been received by that time. Further, it will provide an update regarding the anticipated timing of all remaining work efforts.

Subsequently, the results of all remaining investigations outlined in Section 10 (other than those that are a part of the PICM and the additional fish monitoring) will be presented and discussed in an addendum to the present report, together with overall conclusions that are affected by those additional data. It is not possible at this time to determine the schedule for the submission of that addendum, since the completion of the remaining

investigations depends on various factors such as the occurrence of suitable flow conditions, the need to perform further downstream sampling and analysis activities for non-PCB constituents, etc. It is anticipated that this addendum will be submitted within 60 days from receipt of all the remaining data collected as part of these investigations. An update on the anticipated schedule will be provided in the interim report mentioned in the preceding paragraph.